



Langley Research Center

LPR 8717.1B

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JOB HAZARD ANALYSIS PROGRAM

National Aeronautics and Space Administration

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Office of Primary Responsibility: Safety and Mission Assurance Office

PREFACE

P.1 PURPOSE

This Langley Procedural Requirement (LPR) establishes the minimum procedural requirements for employees to perform a Job Hazard Analysis (JHA) at NASA Langley Research Center (LaRC). It provides a safety assessment technique that identifies uncontrolled hazards and steps to eliminate or reduce them to an acceptable risk level. This JHA program fulfills the procedural requirement for performing workplace analysis as required by the Occupational Safety and Health Administration (OSHA).

P.2 APPLICABILITY

This LPR applies to all NASA LaRC civil service employees. Contractor employees shall either utilize this LPR or develop an alternate procedure that meets the requirements of Public Law 91-596, also cited as the "Occupational Safety and Health Act of 1970", Section 5(a)(1).

P.3 AUTHORITY

NPR 8715.3, "NASA General Safety Program Requirements"

P.4 APPLICABLE DOCUMENTS

- a. OSHA Handbook 3071, "Job Hazard Analysis,"
- b. NASA Langley Form 164, "Report of Safety/Health Concern/Close Call."
- c. NASA Langley Form 275, "Job Hazard Analysis (JHA) Worksheet."
- d. NASA Langley Form 338, "Job Hazard Analysis Master Listing of Jobs."

P.5 MEASUREMENT/VERIFICATION

Through the reduction of injuries, illnesses, equipment/property damage, and close calls occurring on Center.

P.6 CANCELLATION

LPR 8717.1, dated August 3, 2007

Original signed on file

Stephen G. Jurczyk
Deputy Director

DISTRIBUTION:

Approved for public release via the Langley Management System; distribution is unlimited.

1.0 INTRODUCTION

1.1 BENEFITS OF A JOB HAZARD ANALYSIS

1.1.1 The Job Hazard Analysis (JHA) program shall actively involve employees at LaRC in the identification of unsafe conditions during a job performed in their workplace.

1.1.2 Also, employees shall participate in the resolution of identified unsafe conditions through their recommendations for design, engineering controls, safety devices, warning devices, training, or personal protective equipment, while performing the job.

1.1.3 JHAs shall be used by employees as a training tool for mentoring new employees and refreshing needed skills in demanding multi-facility workplaces.

1.2 VALUE OF A JOB HAZARD ANALYSIS

1.2.1 Supervisors shall use the identified unsafe conditions on a JHA to eliminate and prevent hazards in their workplaces, thereby reducing the number of work-related injuries and illnesses; providing safer, more effective work methods; and increasing worker productivity.

1.2.2 The JHA shall also be used as a tool for training new employees in the steps required to safely perform their assigned jobs.

1.3 EXCLUSIONS

1.3.1 Jobs performed under the following programs shall not require a JHA:

- a. Any facility procedure currently in Configuration Management On-line (CMOL) program.
- b. Any task/process currently conducted under a Safety Permit (e.g., Potentially Hazardous Materials Permit (PHM), Non-Ionizing Radiation (LASER) Permit, Explosive Safety Permit)

1.3.2 Branch Heads/Line Supervisors shall have the authority to instruct employees to create and utilize JHAs for jobs in accordance with the procedural requirements of this LPR.

1.4 WAIVERS

1.4.1 Request for waivers to any of the requirements in this LPR shall be submitted to SFAB in writing and processed in accordance with LMS-CP-7151, "Obtaining Waivers for Langley Management System (LMS) Requirements."

2.0 RESPONSIBILITIES

2.1 ORGANIZATIONAL UNIT MANAGER

The Organizational Unit Manager (OUM), or assigned designee, shall be responsible for:

- a. Implementing and enforcing the JHA program within their organization.
- b. Annually reviewing their organization's JHA program.
- c. Determining appropriate corrective actions for JHA recommendations when asked by the Branch Head/Line Supervisor.

2.2 BRANCH HEADS/LINE SUPERVISORS

2.2.1 The Branch Head/Line Supervisor shall be responsible for:

- a. Establishing a Master Job List of JHAs, using LF 338, "Job Hazard Analysis Master Listing of Jobs," which schedules and prioritizes JHAs to be conducted.
- b. Assigning an employee to create/review each JHA listed on LF 338, using LF 275, "Job Hazard Analysis (JHA) Worksheet."
- c. Ensuring employees complete JHAs which they have been assigned to develop.
- d. Assisting employees in performing JHAs, when needed.
- e. Reviewing/approving the completed JHAs for thoroughness.
- f. Prioritizing, tracking, and implementing accepted recommendations resulting from completed JHAs. Implementation of accepted recommendations involving engineering modifications shall be managed with identified interim action until modifications are complete. When recommendations are not feasible, the OUM shall determine the appropriate corrective action.
- g. Scheduling the review of all JHAs, located on LF 338 annually to determine if there have been changes to the job and ensure hazards associated with any changes have been assessed and the appropriate steps added to the JHA.

2.3 FACILITY SAFETY HEAD

2.3.1 The Facility Safety Head (FSH) shall be responsible for:

- a. Reviewing the completed JHAs for thoroughness.
- b. Maintaining LF 275 copies of all completed JHAs pertaining to their assigned facilities.
- c. Ensuring all approved JHAs are available to employees via paper or electronic copy.
- d. Ensuring all JHAs within their facility are submitted to Branch Head/Line Supervisor for annual review.

2.4 EMPLOYEE

2.4.1 The employee shall be responsible for:

- a. Understanding the requirements of this LPR before performing a JHA.
- b. Informing Branch Heads/Line Supervisors of job's in which a JHA has not been created and they feel an uncontrolled hazard is present.
- c. Identifying uncontrolled hazards in a job, which has a JHA and requesting a review of the JHA when circumstances pertaining to the job change.
- d. Developing a JHA by defining the sequence of steps or activities, identifying the potential hazards present in each step or activity, and recommending safe practices (e.g., engineering controls, actions, procedures, personal protective equipment (PPE) to eliminate or reduce each hazard.
- e. Documenting the JHA for the selected process or activity by completing each of the three sections on LF 275. *(Note: Additional subject matter expert resources, as needed, may be utilized to assist in the job evaluation, including, but not limited to Facility Safety Heads (FSH)/Facility Coordinators (FC), the SFAB, cognizant system engineers, Standard Practice Engineers (SPE), etc.)*
- f. Recommending any changes to their Branch Head/Line Supervisor required to facilitate personnel safety; including, but not limited to, specific procedures, policies, equipment, training, etc.
- g. Providing the Branch Head/Line Supervisor with a completed JHA.

2.5 SAFETY AND FACILITY ASSURANCE BRANCH (SFAB)

2.5.1 SFAB employees shall be responsible for:

- a. Assisting in the development/completion of a LF 275, as requested.
- b. Supporting organizations in implementing the LaRC JHA program.

3.0 CREATING, WRITING, REVIEWING, AND MAINTAINING JOB HAZARD ANALYSIS IN THE WORKPLACE

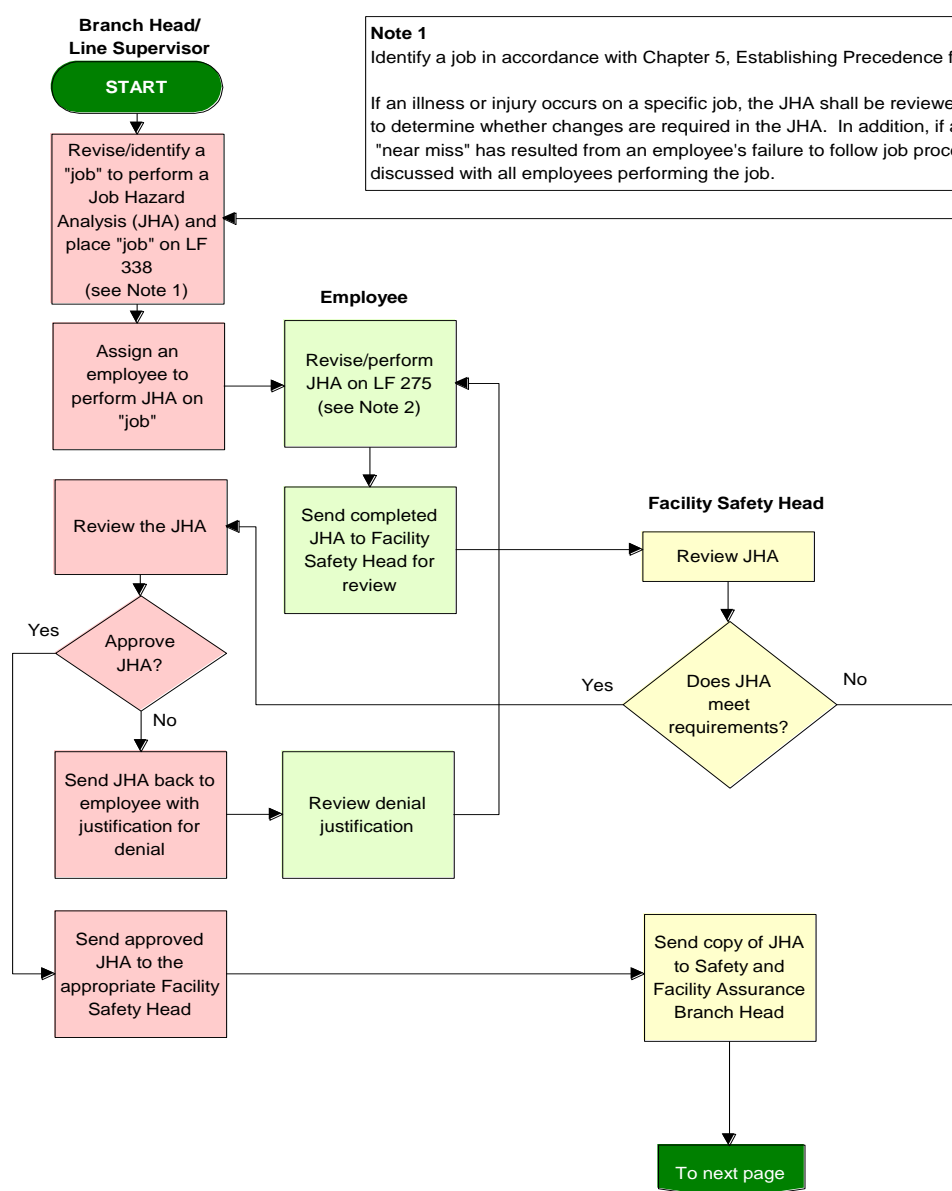
3.1 GENERAL

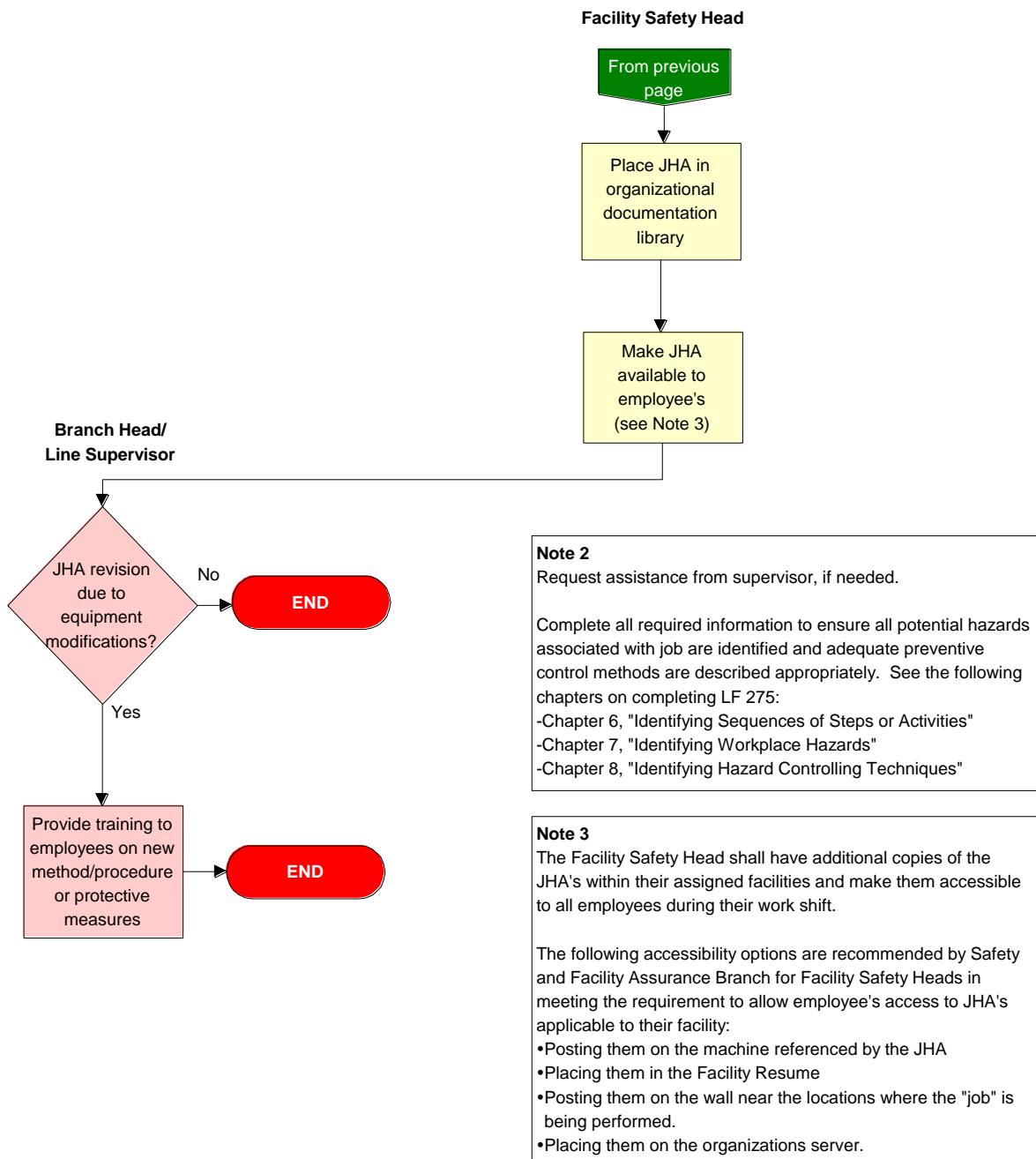
Once the need for a JHA is identified on the organizations LF 338, the JHA shall be prepared using LF 275.

3.2 PROCESS

General Information

The following records are generated by this procedural requirement:
LF 338, "Job Hazard Analysis Master Listing for Jobs"
LF 275, "Job Hazard Analysis (JHA) Worksheet"





4.0 UTILIZATION OF A JOB HAZARD ANALYSIS IN THE WORKPLACE

4.1 GENERAL

4.1.1 All LaRC employees shall utilize JHAs in the workplace to proactively abate hazards encountered in their work environments while performing a job.

4.1.2 If a documented JHA does not exist, the job shall be placed on the organizations LF 338 and scheduled for creation. The only exception for not placing the job on the LF 338 is if the job is considered time-critical (refer to Section 4.3 of this LPR for the procedural requirements pertaining to time-critical JHAs). Procedural requirements for establishing precedence for jobs to be analyzed are discussed in Chapter 5 of this LPR.

4.2 REVIEWING ESTABLISHED JHAS

4.2.1 Employees shall review approved/renewed JHAs a minimum of monthly, when they perform a job covered by a JHA.

4.2.2 This review shall be performed prior to beginning the job and the employee shall acknowledge their review by placing their initials next to the first step in the JHA, next to the second step, and continue to initial next to each job step until they have initialed all of the job steps for that particular JHA.

4.3 TIME - CRITICAL JHA

4.3.1 During operations, a job may need to be performed, which is not covered under a JHA.

4.3.2 An on-the-run mental or oral review of the situation, using the JHA procedural requirement, shall be performed in lieu of recording the steps on paper.

4.3.3 Any job, which utilizes the time-critical JHA methodology, shall not be performed more than once without being flagged for requiring a JHA.

4.3.4 Jobs performed more than once shall not be considered time-critical and shall utilize a documented JHA using LF 275.

4.3.5 If a documented JHA does not exist, the job shall be placed on the organizations LF 338 and scheduled for creation.

5.0 ESTABLISHING PRECEDENCE FOR CREATING JHAS

5.1 GENERAL

5.1.1 A JHA shall be performed for all jobs in the workplace, whether the job task is “special” (non-routine) or routine.

5.1.2 Even one-step jobs, such as those in which only a button is pressed, shall be analyzed by evaluating surrounding work conditions.

5.1.3 In order to ensure the jobs with the most potential hazards are addressed first, precedence for creating JHAs shall be established by each organization.

5.2 JHA DEVELOPMENT PRIORITIZATION

5.2.1 JHAs shall first be created for any job within an organization that has resulted in an injury or illness, damage to NASA property or equipment, or a close call/or near miss reported on a LF 164, "Report of Safety/Health Concern/Close Call."

5.2.2 Branch Heads/Line Supervisors shall review any injuries or illnesses, damage to NASA property or equipment, or close calls/near misses reported via a LF 164 from the previous 4 years (from the effective date of this LPR) and create JHAs for those jobs related to these incidents.

5.3 REQUIREMENTS FOR PRECEDENCE OF JOBS TO BE ANALYZED

5.3.1 The following shall be followed by Branch Heads/Lines Supervisors to determine the precedence of jobs to be analyzed within their organization:

- a. Jobs with a history of injuries or illnesses.
- b. Jobs with a history of “close calls.”
- c. Jobs where an employee/supervisor requests a JHA be performed.
- d. Jobs that have repetitive tasks with potential for an injury or illness.
- e. Jobs that require the handling of hazardous material.
- f. Jobs that take place in hazardous physical environments (e.g., work at heights, loud noise, extreme temperatures, confined spaces).
- g. Jobs that require the use of Personal Protective Equipment (PPE).
- h. Jobs that involve a **NEW** process/procedure/machine/chemical.

5.3.2 The procedural requirement for performing a JHA on a particular job is set forth in Chapter 4 of this LPR.

6.0 IDENTIFYING SEQUENCES OF STEPS OR ACTIVITIES

6.1 GENERAL

6.1.1 Nearly every job can be broken down into job tasks or steps. In the first part of the JHA, list each step of the job in order of occurrence as the employee performs the job.

6.2 NUMBER OF WORDS

6.2.1 Enough information shall be provided to describe each job action, but do not make the breakdown too detailed. Three or four words are normally enough to describe each step in the task. Begin each step with action words, such as “remove”, “carry”, “assemble”, “open”, etc. (a list of action verbs may be found in Appendix D of this LPR).

6.3 BREAKING DOWN THE TASK

6.3.1 The task shall be broken down into its basic steps, for example, what is done first, what is done next, and so on (Figure 6-1). This shall be done by:

- a. Observing the task performed by another employee.
- b. Discussing it with other employees.
- c. Using the employee’s experience and knowledge of the task.
- d. A combination of all three.

6.4 NUMBER OF JOB STEPS

6.4.1 JHAs shall contain the minimum number of job steps to describe the jobs. Identifying too many job steps may hinder the employee’s ability to understand the hazards identified in the JHA.

6.4.2 Jobs which warrant numerous job steps shall be split up to allow multiple JHAs to be established. This will allow the employee to review each JHA before performing the job and help the employee remember the hazards associated with each step. Remember, the objective is to keep it brief to increase job hazard awareness, not impact production.

Figure 6-1. A worker performing the basic job steps for grinding iron castings.



Grinding Castings: Job Steps

1. Reach into metal box to right of machine, grasp casting and carry to wheel.

2. Push casting against wheel to grind off burr.

3. Place finished casting in box to left of machine.

7.0 IDENTIFYING WORKPLACE HAZARDS

7.1 GENERAL

7.1.1 After each job step has been recorded on LF 275, the preparer shall examine each job step to determine the hazards associated with it and the potential for resulting in an incident (Figure 7-2).

7.2 DETERMINATION OF HAZARD IDENTIFICATION

7.2.1 Preparers shall ensure all tasks are thoroughly reviewed to identify their hazards. The following are example questions which may be asked, to ensure all appropriate hazards are identified:

- a. Is personal protective clothing and equipment required?
- b. Are work positions, machinery, pits or holes, and hazardous operations adequately guarded?
- c. Are lockout/tagout procedures required for machinery deactivation during maintenance procedures?
- d. Will the wearing of clothing or jewelry present a hazard of getting caught in the machinery or otherwise cause a hazard?
- e. Are there fixed objects that may cause injury, such as sharp machine edges?
- f. Is the flow of work improperly organized (e.g., Are rapid movements required that may cause a hazard)?
- g. Can an employee get caught in or between machine parts?
- h. Can an employee be injured by reaching over moving machinery parts or materials?
- i. At any time will an employee be in an off-balance position?
- j. Will the employee be positioned to the machine in a manner that is potentially dangerous?
- k. Will the employee be required to make movements that could lead to or cause hand or foot injuries, or strain from lifting, the hazards of repetitive motions?
- l. Can an employee be struck by an object or lean against or strike a machine part or object?
- m. Can an employee fall from one level to another?
- n. Can an employee be injured from lifting or pulling objects, or from carrying heavy objects?
- o. Will environmental hazards, such as, dust, chemicals, radiation, welding rays, heat, or excessive noise, result from the performance of the job?

7.2.2 The preparer shall ask questions, as each job requires, until all hazards have been identified.

7.2.3 The preparer shall utilize the injury sources list (Figure 7-1) to allow hazards to be identified by a common definition across all JHAs.

Figure 7-1, Injury Source List

Injury Source List

- 1) Struck by (SB)
- 2) Struck Against (SA)
- 3) Caught Between (CB)
- 4) Contact With (CW)
- 5) Contacted By (CBy)
- 6) Caught On (CO)
- 7) Caught In (CI)
- 8) Fall, Same Level (FS)
- 9) Fall, To Below (FB)
- 10) Overexertion (O)
- 11) Exposure (E)

Figure 7-2. Existing or potential hazards for grinding iron castings.



Grinding Castings: Hazards

1. Hand Struck Against (SA) metal box or casting while removing from bin on the right.

2. Hand Struck Against (SA) wheel. Struck By (SB) flying sparks.

3. Hand Struck Against (SA) metal box or casting while placing in bin on the left.

8.0 IDENTIFYING HAZARD CONTROLLING TECHNIQUES

8.1 GENERAL

8.1.1 After each hazard or potential hazard has been identified, the hazards shall be controlled (Figure 8-1).

8.1.2 This shall be accomplished by the utilization of several hazard-controlling methods. General statements, such as “Be Careful,” shall not be acceptable. Be as specific as possible in recommendations for hazard control.

8.2 HAZARD CONTROLLING METHODS

8.2.1 Engineering

8.2.1.1 Engineering controls involve changing the physical condition, materials, or procedural requirements that create the hazard. Engineering control measures shall be considered the most effective means to eliminate the hazard or reduce its severity.

8.2.1.2 While other hazard measures may provide protection from hazards, they do not eliminate or control the source of the hazard.

8.2.2 Safety

8.2.2.1 Using PPE to control hazards shall be considered using safety to abate the hazards. PPE does not control the hazard, but it protects/reduces the hazards effect on the employee. Examples of PPE are hard hats, safety glasses, ear protection, gloves, respirators, face shields, safety shoes, etc.

8.2.3 Warning

8.2.3.1 Visual and audible means to alert personnel to hazards shall be acceptable, but shall not be considered barriers.

8.2.3.2 Engineering and safety hazard controlling methods shall be considered barriers from hazards. Warning devices are effective only when personnel are aware of them in sufficient time to react; and do, in fact, react.

8.2.4 Administrative

8.2.4.1 Administrative Controls involve re-arranging work schedules, improving housekeeping, controlling access, or using procedures (Lockout/Tagout) to control the hazards.

Figure 8-1. Shows the recommendations for new steps and protective measures when grinding iron castings.



Grinding Castings: Safe Procedures or Personal Protection Equipment

1. Wear gloves and steel-toed shoes.
2. Provide larger guards over the wheel. Provide safety goggles.
3. Provide for removal of completed stock.

APPENDIX A: DEFINITIONS

- A.1 Analysis** – Separation of steps relating to a job to identify unsafe conditions.
- A.2 Caught Between (CB)** - A Caught Between injury occurs when the employee becomes stuck between two different objects, commonly referred to as a “pinch point”. Examples of Caught Between injuries are an employee's foot being caught between a dock and a trailer during warehouse unloading operations; or an employee setting a heavy box on the ground, lodging their hand between the box and the ground.
- A.3 Caught In (CI)** - A Caught In injury occurs when the employee, or part of the employee, becomes enclosed by an object. Examples of Caught In injuries are an employee entering a confined space becomes lodged in the narrow access opening; or a supervisor notices there is no possible way to open a storage room from the inside and has the problem corrected to prevent any Caught In incidents.
- A.4 Caught On (CO)** - A Caught On injury occurs when the employee becomes part of a stationary or moving object. Examples of Caught On injuries are an employee accessing the ceiling of a building and during ascent the employee's ring becomes hung on an object, resulting in severe lacerations or severance of the finger; or an employee dragging an extension cord has the cord suddenly stopped at a “pinch point” and is swept off their feet.
- A.5 Cause** - The stimulus or triggering mechanism/act, which precipitates an undesired event (accident).
- A.6 Configuration Management On Line (CMOL)** - A web-based application that enables users to access LaRC facility Configuration Controlled Documents electronically via their desktop computer.
- A.7 Contacted By (CBy)** - A Contact By injury occurs when the employee is stationary or in motion and the hazard forces the employee to contact the hazard. Examples of Contacted By injuries are an employee opens a valve and is sprayed in the face by a chemical; or an employee is cleaning a tool and the tool slips out, falls into the cleaning solution, and splashes the employee in the face.
- A.8 Contact With (CW)** - A Contact With injury occurs when the employee is stationary or in motion and the hazard (chemical, sharp edge, etc.) contacts the employee. Examples of Contact With injuries are an employee placing their hand on a hot surface; an employee walking by and contacting a bare wire, suffering a severe shock; or an employee drops a box of corrosive chemicals and begins cleaning it up with paper towels, in lieu of the appropriate protective gloves
- A.9 Controls** - Actions taken to eliminate hazards or reduce their risk.

- A.10 Exposure (E)** - An Exposure injury occurs when the employee, or a part of the employee, becomes susceptible to gases, vapors, fumes, dust, mists, temperature extremes, oxygen deficiencies, and noise. Exposure injuries can be of an acute or chronic nature. Examples of Exposure injuries are an employee working in extremely hot weather fails to hydrate and becomes disoriented and faints; or an employee ignores the low-level oxygen alarm in a room and walks into the room and passes out due to the low-level of oxygen.
- A.11 Fall, Same Level (FS)** - A Fall, Same Level injury occurs when the employee is forced by gravity to the same level in which they were either standing, walking, or running. Examples of Fall, Same Level injuries are an employee slips on a wet floor while entering the restroom; or an employee trips over an unsecured extension cord placed across a walking path.
- A.12 Fall, To Below (FB)** - A Fall, To Below injury occurs when the employee is forced by gravity to a lower level from which they were either standing, walking, or running. Examples of Fall, To Below injuries are an employee overextending on a ladder and falling; or an employee being distracted by a fellow employee inadvertently walks off the edge of a warehouse loading dock.
- A.13 Hazard** - A condition, which has the potential to result in damage to equipment and/or personnel injury, illness, or death.
- A.14 Job** - A sequence of steps that together accomplish a work goal for the mission of NASA.
- A.15 Overexertion (O)** - An Overexertion injury occurs when the employee or a part of the employee body fails to properly function due to stress or strain. Examples of Overexertion injuries are an employee decides to lift an object over 50 pounds and injures their back or an employee while lifting several heavy objects begins to have cramps in their legs because of a low potassium level.
- A.16 Potential Hazards** - Any hazard, if left uncontrolled, could result in an unplanned event or series of events resulting in harm to public safety or health, injury, illness, or death to employees, or damage to or loss of assets.
- A.17 Risk** - A possible loss expressed in terms of severity and probability.
- A.18 Standard Operating Procedures (SOP's)** - Detailed, written, step-by-step instructions to be routinely followed in operating a facility. SOP's contain all of the information considered pertinent to safe and efficient operation of the facility. SOP's are the source documents for Operational Checklists and are the basis, in part, for the facility Hazard Control Analysis. SOP's may also be used for training operator personnel. SOP's are under the control of the Configuration Management Program.

- A.19 Struck Against (SA)** - A Struck Against injury occurs when the object is stationary or moving and the employee in motion contacts the object. Examples of Struck Against injuries are an employee walking into an open filing cabinet door; an employee walking into forklift forks at knee height, sustaining contusions and/or lacerations; or an employee applying leverage to loosen a bolt, slipping and striking a steel surface.
- A.20 Struck By (SB)** – A Struck By injury occurs when the employee is stationary and an object in motion contacts the employee. Examples of Struck By injuries are an employee being hit in the mouth by the inner door of a restroom as another individual is exiting; a hammer driving an employee's finger instead of a nail; or sparks from a welding operation contacts an employee's forearm causing burns.
- A.21 Undesired Event** - An event (or series of events), which unleashes the potential inherent cause of a hazard and, either directly or indirectly, results in damage and/or personnel injury, illness, or death.

APPENDIX B: ACRONYMS

CB	Caught Between
CBy	Contracted By
CI	Caught In
CMOL	Configuration Management On-Line
CO	Caught On
CW	Contract With
E	Exposure
FB	Fall, To Below
FC	Facility Coordinator
FS	Fall, Same Level
FSH	Facility Safety Head
JHA	Job Hazard Analysis
LF	Langley Form
LMS	Langley Management System
LOTO	Lockout/Tagout
LPR	Langley Procedural Requirement
NPR	NASA Procedural Requirement
OSHA	Occupational Safety and Health Administration
OUM	Organizational Unit Manager
PHM	Potentially Hazardous Material
PPE	Personal Protective Equipment
SFAB	Safety and Facility Assurance Branch
SMAO	Safety and Mission Assurance Office
SOP	Standard Operating Procedures
SPE	Standard Practice Engineer
SA	Struck Against
SB	Struck By

APPENDIX C: TYPICAL JOBS IN WHICH WORKPLACE HAZARDS MAY REQUIRE A JHA

The following are examples of jobs in which a JHA may eliminate workplace hazards.

Shop Operations
Operating a Power Band Saw
Operating a Bench Grinder
Using the 5-ton Bridge Crane
Using a Circular Saw to Cut Metal
Handling Compressed Gases
Using the 10 inch monarch EE Lathe to Cut Metal Components
Using a Drill Press on Aluminum Components
Drilling & Milling
Hand Soldering (Replacing Components for a PC Board))
Electrical Wiring - High Voltage
Setting up an Extension Ladder
Using a Forklift to Move Material
Replacing Light Bulbs with the 65-Ft JLG Boom
Using Portable Electrical Power Tool
Cutting Wood on a Table Saw
Bending/Forming Metal with the Power Press Brake
Applying Conformal Coating to PC Boards

Miscellaneous Operations
Filling Vehicle Tank from Underground Storage Tank

Laboratory Operations
Handling Laboratory Animals
Using Laboratory Scales
Moving Large Cryogenic Liquid Dewar from Loading Dock to Lab
Operation of Spectra-Physics Model PIV 400-30 Nd Laser
Handling Compressed Gases
Transferring of Chemicals Between Containers
Dry Waste Packing a 55 Gallon Drum
Using the Steam Sterilizer

Office Activities
Filing Activities
Moving/Storing Office Supplies
Mail Distribution
Operating the Paper Shredder
Operating the Paper Cutter
Removing Misfed Paper from Copier
Cleaning Office Furniture and Equipment
Connecting Electrical Equipment in the Office
Using a Computer

APPENDIX D: JHA ACTION VERBS

Accounts	Computes	Drives	Innovates	Plans	Schedules
Acquires	Condenses	Dumps	Inspects	Posts	Scores
Adapts	Confers	Duplicates	Installs	Predicts	Screens
Adjusts	Confirms	Edits	Instructs	Prescribes	Seals
Administers	Consolidates	Elaborates	Interprets	Presents	Searches
Adopts	Constructs	Elects	Interviews	Preserves	Selects
Advises	Consults	Eliminates	Inventories	Prevents	Sells
Advocates	Controls	Employs	Invents	Procures	Sends
Allocates	Converts	Encourages	Investigates	Produces	Serves
Allots	Conveys	Endorses	Issues	Programs	Services
Alters	Coordinates	Enlists	Itemizes	Promotes	Smells
Amuses	Copies	Enters	Joins	Proofreads	Solicits
Analyzes	Corrects	Entertains	Judges	Proposes	Solves
Answers	Correlates	Escorts	Justifies	Pulls	Sorts
Applies	Corresponds	Estimates	Leads	Purchases	Stacks
Appoints	Counsels	Evaluates	Lifts	Pushes	Stores
Appraises	Counts	Examines	Loads	Quantifies	Studies
Approves	Creates	Exchanges	Locates	Questions	Submits
Arbitrates	Debates	Exercises	Lubricates	Ranks	Summarizes
Arranges	Decides	Exhibits	Manages	Rates	Supplies
Assembles	Defends	Experiments	Manipulates	Reaps	Surveys
Assesses	Defines	Explains	Manufactures	Rebuilds	Synthesizes
Assigns	Delegates	Extracts	Maps	Recommends	Systematizes
Audits	Deliberates	Fabricates	Matches	Reconciles	Tabulates
Authorizes	Delivers	Fastens	Measures	Records	Teaches
Awards	Demonstrates	Feeds	Mediates	Reduces	Tends
Balances	Describes	Files	Mends	Refers	Testifies
Bargains	Designates	Forecasts	Mixes	Refines	Tests
Batches	Designs	Formulates	Modifies	Registers	Totals
Budgets	Destroys	Garners	Monitors	Regulates	Traces
Calculates	Detects	Gathers	Motivates	Reinforces	Trades
Calibrates	Determines	Gauges	Moves	Rejects	Trains
Carries	Develops	Generates	Negotiates	Releases	Transacts
Categorizes	Devises	Governs	Notifies	Remits	Transcribes
Certifies	Diagnoses	Grades	Nullifies	Repairs	Transfers
Checks	Digs	Guards	Observes	Replaces	Translates
Circulates	Directs	Guides	Obtains	Reports	Transmits
Classifies	Disburses	Hauls	Opens	Represents	Treats
Cleans	Disciplines	Hires	Operates	Rescinds	Turns
Climbs	Discovers	Hypothesizes	Organizes	Rescues	Tutors
Coaches	Discusses	Identifies	Originates	Researches	Types
Codes	Dismantles	Illustrates	Outlines	Resolves	Updates
Collaborates	Dispatches	Implements	Overhauls	Retrieves	Ushers
Collates	Dispenses	Imports	Oversees	Reviews	Washes
Collects	Displays	Improves	Packages	Revises	Waxes
Compares	Disseminates	Indexes	Permits	Rewards	Weighs
Compiles	Distributes	Indicts	Persuades	Salvages	Writes
Composes	Drafts	Informs	Picks up	Scans	